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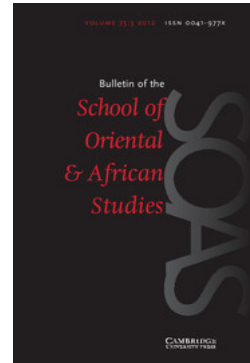
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R. K. Sprigg

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‘ VOCALIC ALTERNATION ’ IN THE BALTI, THE LHASA, AND THE SHERPA VERB, AS A GUIDE TO ALTERNATIONS IN WRITTEN TIBETAN, AND TO PROTO-TIBETAN RECONSTRUCTION¹

By R. K. SPRIGG

In *Sino-Tibetan* (1972) P. K. Benedict has offered two different accounts of the significance, for Tibeto-Burman (TB) and Sino-Tibetan (ST) reconstruction, of the three types of ‘ vocalic alternation ’ in the Written Tibetan (WT) verb, *a/a/o*, *e/a/o* and *o/a/o*. His original account (c. 1942–3) reads: ‘ Tibetan, however, shows a puzzling type of vocalic alternation in its verbs, in which stems in *a* regularly take *o* in the imperative and often either *o* or *e* in the present . . . The *e* of the present stem is possibly to be interpreted as an effect of the prefixed element ² < **a*- [ə]. Similarly, the *o* of the imperative stem has perhaps been conditioned by an archaic imperative suffix -*o* . . . ’ (pp. 126–7). His revised version (1972) reads: ‘ The Chinese vowels cannot be explained without setting up a 7-vowel system for ST . . . and Tibetan verb forms reflect this early system as follows :

ST/TB **a* = T *a* ~ *a* (no alternation, except in the imperative)
ST/TB **ā* = T *a* ~ *o*
ST/TB **ə* = T *a* ~ *e*

We can now, by way of illustration, reconstruct TB **g-sāt* (T *gsod-pa*, Pf. *bsad*) . . . ; also TB **səm* ‘ breath, voice, spirit ’: T *sem(s)-pa*. Pf. *sems* ~ *bsams* ‘ think ’ . . . ’ (p. 126, n. 344).

Since a comparable ‘ vocalic alternation ’ is a notable feature of certain verb lexical items in the Sherpa dialect and, to a lesser extent, in the Balti and Lhasa dialects, it is instructive to examine the role of the alternation in these three dialects and to consider phonological analyses to deal with it, with Sino-Tibetan reconstruction in mind. The following are examples of the three types of alternation in WT (the spelling of the WT forms is in accordance with Jäschke 1881/1934 and, where these are lacking in Jäschke, Gould and Richardson 1949; the last five of the following examples are also the five cited in Benedict 1972, 126):

- (i) present: -*a*-; perfect: -*a*-; imperative: -*o*-
lta *bltas* *ltos/blta* ‘ look ’; *rnga* *brngas* *rngos* ‘ reap ’
rgyab *brgyabs* *rgyob* ‘ throw ’; *’bab* *bab(s)* *’bob/bobs* ‘ descend ’
- (ii) present: -*e*-; perfect: -*a*-; imperative: -*o*-
’gengs *bkang* *khong* ‘ fill ’; *’debs* *btāb* *thob* ‘ throw ’
- (iii) present: -*o*-; perfect: -*a*-; imperative: -*o*-
gsod *bsad* *sod* ‘ kill ’; *’jog* *bzhag* *zhog* ‘ put ’

I. *r* (from ‘ rounding ’) and *ṛ* (non-‘ *r* ’) in Balti and Lhasa dialects, and in Sherpa perfect and imperative forms

A. Balti and Lhasa

Where WT has these three types of vowel alternation, (i) *a/a/o*, (ii) *e/a/o* and (iii) *o/a/o*, in (verb) lexical items, the Balti and the Lhasa dialects have only one type; it resembles the *a/a/o*. In this Balti and Lhasa type, then,

¹ A revised version of a paper of the same title read at the sixth International Conference on Sino-Tibetan Language and Linguistics, University of California, San Diego, October 1973.

lip-rounding alternates with either lip-spreading or a neutral lip position (in association with matching vowel-closure features in either case, and with matching backness-frontness features); and the lip-rounding is also directly related to the imperative grammatical category (but, in Lhasa Tibetan, only to the affirmative imperative) as a member of the set of grammatical categories that includes the imperative, the declarative, and the interrogative; e.g. (the range of pitches covered by the tone-2, or low-tone, classification is symbolized by a grave accent; Sprigg 1954a, 150-3):

	<i>pres.</i>	<i>perf.</i>	<i>imp.</i>	<i>pres.</i>	<i>perf.</i>	<i>imp.</i>
(i) B:	[lta	ltəs	ltəs]	[baps	baps	bəps]
L:	[ta, tə-	tɛ:	tɔ:	[ˈphɪp	ˈphɪp	ˈphɪp]
	'look' (cf. <i>lta</i> , etc.)			'descend', 'fall' (cf. <i>'bab</i> , etc.)		
(ii) B:	[skā:	skā:	skō:]	[təp	təp	təp]
L:	[kā:, kən-	kā:	kā:/kwō:]	[tɪp	tɪp	tɪp/thɒp]
	'fill' (cf. <i>'geng</i> , etc.)			'sow' (cf. <i>'debs</i> , etc.)		
(iii) B:	[ltsap	ltsap	ltsəp]	[jaq	jaq	jəq]
L:	[lɪp	lɪp	lɪp]	[ˈɛa:, ˈɛa:-	ˈɛa:	ˈɛo:/ˈɛa:]
	'teach' (cf. <i>slob</i> , etc.)			'put' (cf. <i>'jog</i> , etc.)		
L:	[sɛ:, sɛ:-	sɛ:	sə:/sɛ:]			
	'kill' (cf. <i>qsod</i> , etc.)					

(See also, for Balti, Sprigg 1967, 188–91, 201, 207 and, for Lhasa, Sprigg 1968, 388–412, 577–83, 593–624, 712–16.)

Most of the lexical items of the type shown in (i)–(iii) above alternate between lip-rounding in some forms of a lexical item as against non-rounding in the others: in Balti, [ə ʃ: ɳ] versus [a ʁ a ʃ: ʌ], and in Lhasa, [ø: ʃ: ɒ ɔ:] versus [a ʌ ɛ: ʁ ɔ: a: ʌ: e:]. My phonological analysis of these forms is to state the lip-rounding features not only of the (rounded) vowel but also of the preceding consonant, especially the lip-rounding of velar consonants symbolized in the [kw-] of [kwʃ:], together with the associated degrees of vowel closure (openness, half-openness, half-closeness) and vowel backness and frontness, as the phonetic exponents of a type of syllable-initial piece (comprising initial consonant and vowel) termed the *r* piece (so named from the initial letter of *rounding*); the non-rounded features of both vowel and preceding consonant in the remaining forms, together with the associated closure and backness-frontness features of the vowel, are then treated as phonetic exponents of a contrasting syllable-initial-piece term *r̄* (non-*r*), as in (i) above, ‘look’,

	<i>r</i>		<i>r̄</i>
B:	[<u>l</u> to-] (WT <i>ltos</i>)		[<u>l</u> ta], [<u>l</u> tə-] (WT <i>lta</i> , <i>bltas</i>)
L:	[tə:]		[ta, tΔ-], [tɛ:]. ²

This r-versus- \bar{r} alternation is confined to lexical items that have relatively open types of vowel:

open front/back spread	[a ɑ ǣ: ǣ̃: ǣ̃: ɑ̃:]	
open back rounded		[ɔ]
half-open back/central spread	[ʌ ʌ̃: ʊ]	
half-open front spread		[ɛ: ɛ̃]
half-open back rounded		[ɔ ɔ̃: ɔ̃:]
half-close back spread	[ɤ]	
half-close front spread		[e:]
half-close front rounded		[ø:]

² For this r-versus-ṛ type of analysis within the Lhasa dialect see also Sprigg 1968, 577–82.

(of these the half-close vowel [ɛ:] occurs only in the appropriate ('close') vowel-harmony conditions, alternating with [ɛ:]; cf. Sprigg 1954b, 568-72). It is interesting to note that all thirteen types of long and short vowel in the left-hand and centre columns above, from [a] to [ɛ:], correspond to the symbol *a* of WT orthography.

This alternation in feature between rounding and non-rounding can be used as a criterion for grouping all Balti and Lhasa lexical items that show this alternation into a major phonological category that can conveniently be termed the ə-piece, or ə, category, distinguishing them from two other major categories termed the y and the w, the former applying to syllable initials containing close and half-close front spread vowels and their appropriate initial-consonant features, and the latter applying to back rounded vowels and the syllable-initial consonant features that combine with that type of vowel (for examples of the w piece, which is especially prone to confusion with the ə piece as regards lip-rounding, see below pp.112-13).³ Under this criterion all the lexical items in sections (i), (ii) and (iii) of p. 111 above can be classified as ə-piece except the Lhasa-dialect lexical items ['phɣp, 'phɣp, 'phɣp] and [ɭp, ɭp, ɭp]. For non-alternating lexical items such as these two the [ɣ] vowel, half-close back spread, is sufficient for identifying them as ə-piece; indeed all the vowel sounds symbolized in the left-hand column of p. 111 can be used as ə-piece criteria because they are confined to the ə-piece:

open	front/back	spread
half-open	back/central	spread
half-close	back	spread

and so may one of the types of vowel in the centre column, half-open front spread long ([ɛ:]), but not the remaining two types of vowel in that column, [ɛ] and [ɛ:], because they are also to be found in the y type of piece, nor any of the types of ə-piece vowel to be found in the right-hand column because they all overlap the characteristic vowel sounds of the w piece (cf. p. 113), and cannot, therefore, be unerringly identified as ə-piece vowels without further information.

All the phonetic forms in the imperative column of the sets of ə-piece examples on p. 111 above are, therefore, to be classified phonologically as both ə-piece and r-piece forms (or r forms), apart, of course, from the Lhasa forms ['phɣp] and [ɭp], and the alternative (and less common) Lhasa imperative forms ['ɕa:] and [sɛ:], which are classified as r̄ (the Lhasa dialect seems to be in the process of regularizing its imperative forms in favour of the r̄ type, with the result that ə-verb lexical items of a r̄ type, like ['phɣp/'phɣp/'phɣp], will be on the increase); the forms in the other two columns (present, perfect), on the other hand, are all classified as r̄. The Balti dialect, incidentally, shows none of the Lhasa dialect's vacillation: all its imperative forms are classifiable as r. Every Balti ə-verb lexical item can, then, be classified as r-r̄ apart from those which have no imperative form; and so can a majority of the Lhasa lexical items.

This phonological analysis of ə lexical items in terms of r and r̄ (a two-term sub-system) can, perhaps, be made clearer by an excursion into orthography. It is unfortunate that Tibetan orthography has identified the rounding-feature form, or r form (imperative), of most WT ə-type verb lexical items with the

³ For the ə, y, and w types of piece see Sprigg 1954b, 320-50, and Sprigg 1954c, 566-82; cf. also Sprigg 1968, 534-72.

homophonous forms of certain w-type verb lexical items, members of a sub-category termed *wo* ('o' from *open*, because they exemplify the more open of the two closure vowel-harmony types of w verb lexical item, as opposed to the c sub-category, from *closed*). The *wo* type of lexical item has lip-rounding as a feature of all its forms, symbolized by *o* (*na-ro*); e.g.

present: -o(-); perfect: -o(-); imperative: -o-
<i>thob, thob, thob</i> 'get'
<i>rngod, brngod, rngod</i> 'parch'
<i>bgod, bgos, bgos</i> 'divide'

Tibetan orthography also uses the same symbol (*na-ro*) for the *r* forms of *a* verb lexical items, though the use of the symbol *wa-zur* (*w*), in combination with *a*, i.e. *wa*, would have made it possible to align the *r*-form imperative of *a* verbs orthographically with the other forms of the *a* type of verb, the *r̄* forms. *a/a/o*, *e/a/o*, and *o/a/o* verbs would then have appeared as *a/a/wa*, *e/a/wa*, and *o/a/wa*, the *wa* forms being confined to imperative clauses, and providing orthographic evidence of their phonological association with verbs having forms in *a*. A feature-based analysis like this *r-r̄* alternation for *a* lexical items (and for WT *a/a/o*, *e/a/o*, and *o/a/o* verbs) seems superior here to a sound-based (or segment-based) analysis. It is for this reason that I have, in my own usage, avoided Benedict's term 'vocalic alternation': it appears to me to suggest an alternation of vowel *segments* rather than vowel *features*.

Before leaving the *wo* type of example, symbolized by *o* in the WT verb forms above, I give corresponding Balti and Lhasa phonetic forms to illustrate the lip-rounding feature that is common to all the forms of the *wo* type of verb, in contrast with the alternating and, in a few (Lhasa) examples, non-rounded forms of the *a* type of verb given on p. 111, together with corresponding verb-lexical-item *wo* forms from Sherpa:

wo	pres.	perf.	imp.	pres.	perf.	imp.
B:	[thɒp	thɒp	thɒp]	[ɽɒ	ɽɒs	ɽɒs]
L:	[thɒp , tho:-	thɒp	thɒp]	[ɽwɒ , ɽwɒ-	ɽwɒ:	ɽwɒ:]
S:	[thɒb-	thɒβ-	thɒp]	[ɽwɒd-	ɽwɒə-	ɽwɒ:]
	'get' (cf. WT <i>thob</i> , etc.)			'parch' (cf. WT <i>rngod</i> , etc.)		
B:	[βgo	βgos	βgos]			
L:	[gwɒ:	gwɒ:	gwɒ:]	(but literary)		
S:	[gwɒd-	gwɒə-	gwɒ:]			
	'divide', 'distribute' (cf. WT <i>bgod</i> , etc.)					

(Here, and throughout this article, Sherpa present and perfect examples are in the phonetic form appropriate to the colligation of verb with first-person particle ([-i/ɿ]) for the former, and with past-tense particle ([sɔ̃]) for the latter; e.g. [**ɽwɒdi**, **ɽwɒəsɔ̃**] ' (I) shall roast ', ' (he) roasted '.)

B. Sherpa dialect

A corresponding analysis, in terms of *r* and *r̄*, based on the alternation of rounding with non-rounding features in a corresponding phonological type of verb lexical item (also termed the *a*-type), and distinguishing the imperative from contrasting grammatical categories, can be made for the Sherpa dialect (cf. p. 111); e.g.

ə	pres.	perf.	imp.		pres.	perf.	imp.	
(i)	[la-	la:-	lo:]	'look'	[ˈphaq-	ˈphaβ-	ˈphop]	'fall'
(ii)	[ˈg(i)ɛŋg-	kjā:-	kjā:]	'fill'	[dɛ-	tɒβ-	top]	'sow'
(iii)	[ləq- ⁴	laβ-	lop]	'teach'	[ˈzə(q)- ⁵	ˈzax-	ˈzɒk]	'put'

Apart from [kjā:], which has non-rounding, the last form in each of these sets of three ə-verb forms will have its lip-rounding feature assigned, as a phonetic exponent, to the r term of the r- \bar{r} system, together with its matching degree of vowel closure, half-close ([o]), half-open ([ɔ:]), or open ([ɒ]), and with backness of vowel too; the second phonetic form, and, where appropriate, the first (examples i-ii) will have its non-rounding feature assigned to the \bar{r} term, together with its matching vowel-closure features openness ([a a: ɔ ā:]) and half-openness ([a ɛ]), and together with either frontness ([a a: ɛ ā:]) or backness ([a ɒ]); but both types of form, r and \bar{r} , will, of course, be treated as examples of the more general type, ə. In spite of the great phonetic likeness that the r forms bear to a type of lexical items other than the ə, to the w type (p. 113), the examples on lines (i)-(ii), at least, are of $\bar{e}\bar{r}$ forms and $\bar{o}\bar{r}$ forms of the same lexical item, a ə-type lexical item in each case. The imperative form [kjā:], like the Lhasa examples ['phɣp] and [lɣp] (p. 111), is an example of a \bar{r} imperative form; such a form is rare in Sherpa.

This same type of analysis can also, of course, if translated into orthographic terms, be applied to the written forms of WT, whether or not my proposal were to be followed that the imperative forms of a/a/o, e/a/o, and o/a/o verbs be revised from o to wa; and, indeed, the selfsame phonological analysis can be applied to the Reading-style pronunciation in which the orthographic forms of WT are phonetically interpreted.

II. Sherpa perfect and imperative forms versus present

(WT e versus a/o, and o versus a/o)

Sherpa, in its Khumbu dialect, as spoken at Namche Bazaar at least, has more to offer than the Balti or the Lhasa dialects: it conserves phonological distinctions corresponding to (i) the e/a and (ii) the o/a forms of WT e/a/o and o/a/o verb lexical items; e.g.

ə	<i>pres.</i>	<i>perf.</i>	<i>imp.</i>		<i>pres.</i>	<i>perf.</i>	<i>imp.</i>	
(i)	[g(i)ɛŋg- (cf. WT 'gengs, etc.)	kjā:- (cf. WT 'gengs, etc.)	kjā:]	'fill'	[dɛ- dɪb- (cf. WT 'debs, etc.)	taβ- (cf. WT 'debs, etc.)	top]	'plant'
(ii)	[zə(q)- ⁶ (cf. WT 'jog, etc.)	zax- (cf. WT 'jog, etc.)	zok]	'put'	[ləq- ⁷ (cf. WT 'slob, etc.)	laβ- (cf. WT 'slob, etc.)	lop]	'teach'

(present-tense forms are again in the form appropriate to the colligation of the verb with the first-person particle ([-i]), and perfect-tense forms with the past particle [sā]); the present form is, in addition, exemplified in ['dɪb-], the phonetic form appropriate to the colligation of the verb with the present particle ([gɪ]), as in ['dɪbgɪnoʔ] '(he) is planting').

A. Sherpa f and f̄ (WT e versus a/o)

I treat the former of the Sherpa alternations, the one corresponding to

⁴ Other examples of this, the labial-final, type of verb have been observed to have final [b] instead of [q], e.g. [thəbi] '(I) shall get' (WT thob), [səbi] '(I) shall cover'; it is, therefore, possible that [-q] and [-b] are, respectively, fast-tempo and slow-tempo variants.

⁵ Alternatively, ['zəg-], probably as a slow-tempo variant.

⁶ See preceding note.

⁷ See note 4 above.

WT *e/a* of *e/a/o* verbs, on the same principle as the lip-rounding alternation analysed into a *r* term and a *ṛ* term; but the features concerned in this second alternation are not lip-rounding, etc., but lip-spreading and frontness of vowel, combined with matching degrees of vowel closure, half-openness ([ɛ]) and centralized half-closeness ([ɪ]), as opposed to (i) a neutral lip position, combined with the frontness of [a], [a:], and [ā:], or the backness of [a], or a lip-spread position combined with backness and half-openness ([Δ]), the features attributed to the *ṛ* term for the Sherpa examples on p. 114 (but, in this context, excluding [ɛ]), and (ii) the lip-rounding and associated vowel-closure and backness features attributed to the *r* term on p. 114 [o ɔ: ɒ]. The former combination of features, lip-spreading in association with frontness and appropriate degrees of vowel closure, as in [ɛ ɪ], and their matching syllable-initial consonant features, are assigned, as phonetic exponents, to the *f* (from *frontness*) term of a two-term system, *f* and *f̃*; the remaining combinations of features, a neutral lip position, etc., as in [a a: ā a] and lip-spreading in association with backness ([Δ]), and lip-rounding, etc., as in [o ɔ: ɒ], and the syllable-initial consonant features appropriate to them, are to be stated as phonetic exponents of *f̃*. Of the Sherpa *ə*-lexical-item examples at (i) on p. 114, then, the phonetic forms in the *present* columns provide exponents for the *f* term of the system, and those in the *perfect* and the *imperative* columns provide exponents for the *f̃*.

Every one of the Sherpa *ə*-type verb lexical items so far considered can, then, be classified, according to the phonological classification of its present, perfect, and imperative forms, firstly, as either *r-ṛ* or *f̃*, and secondly, as either *f-f̃* or *f̃* (the criteria of *r*, *ṛ*, *f*, and *f̃* do not, however, allow such a lexical item to be classified as *r* or as *f*). All four combinations of these two pairs of classifications, the *r-ṛ* versus *f̃*, and the *f-f̃* versus *f̃*, are possible:

<i>ə</i> -type verb	<i>pres.</i>	<i>perf.</i>	<i>imp.</i>	
(i) <i>ṛ f̃</i> :	[nʌŋg-	nā:-	nan, nā:]	'grant'
(ii) <i>r-ṛ f̃</i> :	[ˈphaŋ-	ˈphaβ-	ˈphop]	'fall'
	[la-	la:-	lɔ:]	'look'
(iii) <i>ṛ f-f̃</i> :	[ˈg(j)ɛŋg-	kjā:-	kjā:]	'fill'
(iv) <i>r-ṛ f-f̃</i> :	[ˈdɛ- ˈdɪb-	tʌβ-	top]	'plant'

A corresponding statement to the one made on pages 114-15 for Sherpa can again be made, in orthographic terms, for WT; and *e/a*, the WT parallel to the Sherpa *f-f̃* alternation, can be illustrated from a 'reformed' orthography in which the *e* of *e/a/o* verbs, corresponding to the *f* form of Sherpa *ə*-type verb lexical items, would be superseded by *ya*; *e/a/o* verbs would then be rendered as *ya/a/wa* (cf. also *drink/drank/drunk* if rendered as *dryank/drank/drwank*). In fact it would have been possible to use the symbols *y* and *ṽ* instead of the *f* and *f̃* terms of the Sherpa phonological system stated on pages 114-15, and *w* and *w̃* instead of the *r* and *ṛ* of pages 110-14; but the symbols *y* and *w* are already in use, in contrast with *ə*, to classify Sherpa lexical items of types that can be described, in general terms, as front spread (*y*) and as rounded back/front (*w*) (for examples of the *w* type see page 113, and for both *w* and *y* types page 116); and the gain in using the symbols *y* and *w* for sub-categories of *ə*, instead of *f* and *r*, would probably be more than offset by confusion between them and the *y* and *w* terms of the *y-w-ə* system, applicable to major phonological categories of Sherpa lexical items.

It is now necessary to return to the examples on this page: some of them show alternations of features that have still to be dealt with.

A glance at the phonetic forms presented above in sections (iii) and (iv)

will be enough to show that the difference between the *f* and *f̃* forms is not confined to vowel alternations (with matching initial-consonant features, especially lip-spreading, neutrality, and lip-rounding): both of these examples also show an alternation of syllable-initial voice ([*g(j)* *d*]) in the *f* form with syllable-initial voicelessness ([*kj* *t*]) in the *f̃*; and, further, both show a matching alternation in pitch-behaviour, symbolized by [*g(j)* *d*], with a grave accent, for the *f* form versus [*kj* *t*] for the *f̃*. Since the voice member of the voicing alternation relates exclusively to the *f* form in those examples, together with the lower of the two distinctive pitch ranges, but voicelessness, and the upper range of pitch features, to the *f̃*, it would appear at first sight that the features belonging to these two pitch-behaviour alternations could be attributed to *f* or to *f̃*, as appropriate, as additional phonetic exponents co-articulated with those already stated as exponents of *f* and *f̃* on pages 114–15; but, unlike the vowel features and initial-consonant features stated as exponents of the terms of the *r-r̃* and *f-f̃* systems above, the voicing alternation and the matching pitch-range alternation are not confined to the *ə* type of lexical item: the examples that follow show that they can be stated for the other two types of lexical items that contrast with the *ə*, for the *y* and for the *w*, as well; e.g. ([*l*] symbolizes a palatalized lateral)

y-type	pres.	perf.	imp.		pres.	perf.	imp.	
	['zud-	tsei-	tseiʔ	'put into'	['gʲeg-	kjæx-	kjæk]	'stop'
	cf. WT	'jug('jud)/bcug/chug			cf. WT	'geg(s)/bkag/khog		
w-type	['zud-	tsøy-	tsu:]	'plant'	['bol-	pəl-	pəl]	'offer'
	cf. WT	'dzugs/btsugs/zug(s)			cf. WT	'bul/phul/phul		

(Present forms, as heretofore, + [*-i/ɪ*], and past forms + [*-sə*]; the present form [*'gjegɪ*] has an alternative form [*'gjei*], possibly fast-tempo, the perfect form [*tsəysə*] an alternative [*tsu:sə*], and the imperative form [*pəl*] an alternative [*pəlɪ*].)

The six *ə*-, *y*-, and *w*-type examples (p. 115, iii–iv; p. 116) are drawn from a total of only seventeen in my material, in each of which there is the same alternation of syllable-initial voice with syllable-initial voicelessness and non-aspiration. In other words, it becomes necessary to recognize a small class of verb lexical items, comprising only seventeen members, for which there is alternation in voicing between one grammatical form of a lexical item and other forms of that lexical item.

This alternation in word-initial phonetic feature is stated phonologically through a further two-term system, the *v-ṽ* (from *voicing*) system, with syllable-initial voice (+ plosion/friction) as phonetic exponents of *v*, and syllable-initial voicelessness and non-aspiration (+ plosion/affrication) as phonetic exponents of *ṽ*. The *v* term is a phonological exponent of the grammatical category 'present'; and the present form of this small sub-category of verb lexical items is, accordingly, to be classified phonologically as a *v*-initial, or *v*, form; the *ṽ* term is a phonological exponent of the grammatical categories 'past' and 'imperative', and the remaining forms, past (traditionally termed 'perfect') and imperative, are, on like grounds, classified as *ṽ* forms. Finally, the lexical item comprising these *v* and *ṽ* forms is classified, consistently with both, as a *v/ṽ* lexical item (for examples see p. 115, iii–iv, and above).

Since the *v* syllable-initial term implies a tone-2 (or 'low'-tone) classification for the word in which it occurs, and *ṽ*, on the other hand, a tone-1 (or 'high'-tone) classification, the present form of lexical items of the *v/ṽ* sub-category could equally well be classified as a tone-2-word form, the other two

forms as tone-1-word, and the lexical item as a whole classified as a tone-1/2-word lexical item, with representation in either tone.

Alternatively, since syllable-initial voice, when combined with plosion ([g(j) d b]) or friction ([ʒ z]), is necessarily related to the lower of the two distinctive pitch registers, and syllable-initial voicelessness + non-aspiration, combined with plosion or affrication ([p t k(j) ts ts]), is related to the upper pitch register, the lower register could be stated as a further phonetic exponent of *v* for the *v/v̄* type of lexical item, and the upper register as a phonetic exponent of the *v̄* term, and thereby associated with the past and the imperative grammatical categories. By such an analysis the pitch-register features of words containing any of these seventeen verb lexical items would have been fully accounted for without having had recourse to a tonal statement for them; and this small sub-category of lexical item would form a non-tonal island in the sea of tonality formed by the dialect as a whole. The vast majority of Sherpa lexical items, however, are classifiable either as tone-1 or as tone-2, and have respectively, either syllable-initial voicelessness or syllable-initial voice in all their forms, without alternation (cf. also Sprigg 1963, 107-8).⁸

B. Sherpa *r* and *ī* (WT *o* versus *a/o*)

The Sherpa examples given in section (ii) on page 114 have lip-rounding ([ø]) in the present form as well as in the imperative ([v̄ ø]), and differ in this respect from other *ə*-type verb lexical items, which have either a neutral lip position for the present form, [a a], or a spread lip position ([ʌ ɛ ɪ]) (for examples see p. 115). For verbs of this further type, then—and there are only twenty-one in my material—there is a close resemblance phonetically between the present form and the imperative form; but this resemblance would not necessarily mean that they should be put into the same phonological category, as examples of the *r* term of the *r-ī* system that was applied, on pages 110-14, to Balti and Lhasa data as well as to Sherpa.

The main difference between lip-rounding in the *r* form of the Sherpa imperative (pp. 113-14) and lip-rounding in the present form of this further type of verb lexical item lies in the power of lip-rounding as a feature of the present form to combine with frontness, in [ø]. Lip-rounding also combines with backness, in both present and imperative forms, when further combined with half-closeness, half-openness, and centralized half-closeness ([o ɔ ɔ]); but only the imperative form shows a combination with openness ([v̄]); e.g.

<i>pres.</i>	<i>perf.</i>	<i>imp.</i>		<i>pres.</i>	<i>perf.</i>	<i>imp.</i>	
[ʒø(ɣ)- ⁹	ʒax-	ʒɔk]	'put'	[løɣ- ⁹	laβ-	lop]	'teach'
cf. WT 'jog/bzhag/zhog				cf. WT slob/bslabs/slob(s)			
[pɔ/ɔɪ-	paj-	pɔɪ]	'light'	[ɪo-	ɪa:-	ɪo:]	'read'
cf. WT sbor/sbar				cf. WT sgrog/bsgrags/sgrag(s)			
[ɔ/ʌmb-	ɪʌm-	ɪɔm]	'destroy'				

In other words the two lip-rounded forms, present and imperative, are by no means dissimilar phonetically; and the only obstacle to treating both as examples of the *r* term already established for the imperative is the problem

⁸ A further argument against treating the pitch-register features of these *v/v̄* lexical items as phonetic exponents of the terms *v* and *v̄* is that *v* and *v̄* are terms of a system of only a relatively small span, the syllable-initial piece, whereas pitch features can usefully be associated with the word as a whole, containing from one to eight syllables, in a tonal statement; cf. Sprigg 1954a, 146-56.

⁹ For alternative phonetic forms see notes 4 and 5.

of accounting for frontness-backness differences and vowel-closure differences between the two grammatical types of form.

The frontness feature of present forms in [ø] occurs only in those present forms in which the verb is colligated with the present particle [-gɪ] or [-(j)ɪ] (WT *gyi/kyi/gi*), with the first-person particle [-i/ɪ] (WT *yin*), or the second/third-person particle [-qiʔ] (WT *yod*), i.e. in the proximity of a syllable containing a front close or closish vowel ([-i -ɪ]). The frontness feature of the verb lexical item can, therefore, be attributed to the fronting disyllabic piece in which it occurs, sometimes reinforced by palatality as a feature of its initial consonant; e.g.

[tɕøjɪnøʔ]	'(he) breaks'	(cf. <i>gcog, gi, 'dug</i>)
[ʔzø(ɣ)i]	'I shall put'	(cf. <i>'jog, yin</i>)
[ɕøqiʔ]	'will split'	(cf. <i>gshog, yod</i>)
[tɕhø/æmbi:]	'I shall dance'	(cf. <i>'cham, yin</i>)

Similarly, the open degree of vowel closure to be heard in the [ɒ] of [ʔɒk] 'put' (p. 117), an imperative form, can be accounted for on environmental grounds, as preceding a velar consonant in word-final position.

It now seems to me reasonable, therefore, that the lip-rounded present forms should be treated as examples of precisely the same *r*-term, of the *r*-*r̄* system, as was applied to the imperative form on pages 110–14. Verb lexical items of the type considered in this section (II B), corresponding to WT *o/a/o* verbs, will, then, also be classified as *r*-*r̄* in terms of the *r*-*r̄* system, and, in terms of the *f*-*f̄* system, as *f̄* (the frontness of the vowel [ø] in present-tense forms having been accounted for not through the *f* term but through the *r* together with the frontness feature harmony described two paragraphs earlier).

It will, however, be necessary to recognize two sub-categories of Sherpa *r*-*r̄* verb lexical item, one in which it is only the imperative form that is classified as *r* (the present form being either *f* or *f̄*; p. 115, ii, iv), and one in which the *r* classification extends to the present form as well, and the perfect form is the only form that is not a *r* form (p. 117). In the latter case the *r*-term would be associated, firstly, with the imperative in the set of grammatical categories comprising imperative, interrogative, and declarative, and, secondly, with the present in the set of forms comprising present and perfect.

It is now possible to add further examples to the *r*-*r̄* examples of the *ə*-type verb lexical items given at (ii) on page 115, distinguishing the two grammatically different sub-categories of *r*-*r̄* verb lexical item as:

- (a) pres.: *r̄*; perf.: *r̄*; imp.: *r*
 (b) pres.: *r*; perf.: *r̄*; imp.: *r*; e.g.

<i>r</i> - <i>r̄</i>	<i>pres.</i>	<i>perf.</i>	<i>imp.</i>		<i>pres.</i>	<i>perf.</i>	<i>imp.</i>	
(a)	[ʔphɒq-	ʔphɒβ-	ʔphɒp]	'fall'	[ʔa-	ʔa:-	ʔɔ:]	'look'
(b)	[ʔzø(ɣ)- ¹⁰	ʔzax-	ʔzɒk]	'put'	[pɔ/ɔɪ-	pɒɪ-	pɔɪ]	'light'

I now consider the solution to this problem proposed on pages 117–18 to be superior to that of Sprigg 1963 (pp. 106–7). There, instead of applying the *r*-*r̄* system to the present form as well as to the perfect and imperative forms I set up an additional two-term system, *n* (from *neutrality*) versus *n̄* (non-*n*), and treated lip-rounding in the present-tense form, together with its associated frontness, backness, and vowel-closure features, as exponents of *n̄*, in contrast

¹⁰ For an alternative phonetic form see note 5.

with the predominantly neutral lip-positions of the perfect-tense form (symbolized in [a a a: Δ]), as exponents of n. By this earlier analysis the examples given at (a) and (b) on page 118 would be examples not of r-ř lexical items but of r-řn and r-řn-ñ, as follows :

	<i>pres.</i> řn ;	<i>perf.</i> řn ;	<i>imp.</i> r	<i>pres.</i> řn ;	<i>perf.</i> řn ;	<i>imp.</i> r
(a) r-ř n :	['phaq-	'phaβ-	'phop]	[la-	la:-	lo:]
	<i>pres.</i> řñ ;	<i>perf.</i> řñ ;	<i>imp.</i> r	<i>pres.</i> řñ ;	<i>perf.</i> řñ ;	<i>imp.</i> r
(b) r-ř n-ñ :	['zø(q)- ¹¹	'zax-	'zøk]	[po/ɔɪ-	pɔɪ-	pɔɪ]

with the lip-rounded present forms ['zø(q)-]¹¹ and [po/ɔɪ-] as examples not of r but of ñ, and the corresponding lip-rounded imperative forms ['zøk] and [pɔɪ] as examples of r. I no longer see any need to add a third system (n-ñ) to the two already proposed, r-ř and f-ř.

Returning, for a moment, to orthographic illustration my preferred analysis, in terms of r-ř and f-ř, would be equivalent to treating the o/a/o verbs of WT as though they were wa/a/wa; and it is analysis in terms of the r-ř system that I should apply to the Reading-style pronunciation of those written forms, just as I have applied it, on pages 117-19, to the Sherpa verb lexical items that correspond to WT o/a/o verbs.

Before going on, in section III, to consider the Sherpa dialect, and the Balti and the Lhasa, in relation to Proto-Tibetan reconstruction I ought first to mention that Sherpa is slightly disappointing in one respect: some of its verb lexical items that are cognates of WT o/a/o-verb lexical items, and of ə-type (ər-ř) lexical items in the Balti and Lhasa dialects, nevertheless do not belong to the Sherpa ə type of lexical item, e.g. the Sherpa lexical items used as examples of the ə-type sub-categories řř, r-řř, řř-ř, and r-řř-ř (pp. 115, 118). These exceptional Sherpa lexical items are classified as being of the y-type, or, more specifically, yo (with 'o' again symbolizing the 'open' term of the closure system, 'open' versus 'close', already referred to in connexion with the w type of lexical item; pp. 112-13). The Sherpa yo type of lexical item includes such Sherpa cognates of the WT ə-type lexical items as *gsod/bsad/sod* 'kill' (p. 111) and *ston/bstan/ston* 'show':

yo-type	<i>pres.</i>	<i>perf.</i>	<i>imp.</i>		<i>pres.</i>	<i>perf.</i>	<i>imp.</i>	
	[səd-	sɛ-	sɛʔ]	'kill'	[tənd-	tɛ:-	tɛn]	'show'

The yo type of lexical item does not, by definition, show the lip-rounding alternation that is one of the criteria of the ə type; and this sub-category of yo lexical item corresponds to WT lexical items in -d and -n (-od/ad/od, -on/an/on). I shall return to this, the yo, sub-category of Sherpa lexical item in section III.

For lexical items of the type presented above as corresponding to WT -od/ad/od and -on/an/on verbs the Golok dialect is a satisfactory source for the r-ř sub-system in relation to the present form: its present forms have the lip-rounding (combined with backness and a half-open degree of vowel closure, [ə]) that one looks for in vain in Sherpa. My Golok data is limited; but it includes the following:

ər-ř	<i>pres.</i>	<i>perf.</i>		<i>pres.</i>	<i>perf.</i>	
	[xsot-	ʔsət-]	'kill' (<i>gsod/bsad</i>)	[řtən-	ʔřtən-]	'show' (<i>ston/bstan</i>).

¹¹ For an alternative phonetic form see note 5.

III. *a*-type lexical items, the *r-r̄* and *f-f̄* sub-systems, and Proto-Tibetan reconstruction

Though, as page 119 has shown, not all Sherpa cognates of Balti and Lhasa *a*-type lexical items belong to the corresponding Sherpa *a* category (as opposed to the *y* and the *w* categories), a substantial number of them do, certainly enough to warrant the setting up of a Proto-Tibetan category **a*, with a Balti, a Lhasa, and a Sherpa *a* term (pp. 111-12) as a reflex of **a*, and the WT vowel symbols *a/a/a*, *a/a/o*, *e/a/o*, and *o/a/o* also serving as reflexes of **a*. All three spoken dialects (four, if one includes Golok) further support the reconstructing of **r-r̄* sub-systems for the **a* term in general, and so do the WT *a/a/o*, *e/a/o*, and *o/a/o* alternations, with *o* as the reflex of **r*, and *a* and *e* as reflexes of **r̄*, though Balti is alone in having *r* consistently as a reflex of **r* in imperative forms (p. 112). In this it is supported by the *o* symbol in the vast majority of the imperative forms of corresponding WT verbs. In the Lhasa dialect, on the other hand, it seems that the reflex of **r* in imperative forms is now quite commonly *r̄* (p. 112), and the invariable use of the *r̄*-form in negative imperative clauses in the Lhasa dialect seems likely to extend the function of *r̄* as reflex of **r* in this dialect, and may lead, eventually, to the loss of the *r-r̄* distinction in it. In Lhasa present-tense forms, and in Balti present-tense forms too, it is already the case that the reflex of **r* is *r̄* (p. 111, iii).

In present-tense forms, then, Sherpa is very helpful: it provides an *r* reflex for the **r* reconstruction (pp. 117-118), supported by the first of the *o* symbols of the WT *o/a/o* formula, the Balti and Lhasa reflexes here being interestingly, but unhelpfully, *r̄* in either case (p. 111, iii). As already mentioned on page 119, however, even Sherpa fails to provide support for the **r* category where its lexical items are cognates of WT verbs in *-od/ad/od* and *-on/an/on*; indeed the Sherpa cognates, unlike the Lhasa, are not even classifiable as *a*-type; e.g.

	<i>pres.</i>	<i>perf.</i>	<i>imp.</i>		<i>pres.</i>	<i>perf.</i>	<i>imp.</i>	
Sherpa yo	[tɛsd-	tɛs-	tɛsʔ]	'cut'	[tɛnd-	tɛ:-	tɛn]	'show'
Balti a	[tʃɛt	tʃɛt	tʃɔt]		[ʈten	ʈten	ʈton]	
Lhasa a	[tɕɛ:	tɕɛ:	tɕɔ:]		[tɕɛ:	tɕɛ:	tɕɛ:/tɕɔ:]	
	cf. WT <i>gsod/bcad/chod</i>				cf. WT <i>ston/bstan/ston</i>			

(Lexical items glossed as 'cut' have been used here instead of those glossed as 'kill', because Balti has no cognate for WT *gsod/bsad/sod* and its Sherpa and Lhasa cognates; pp. 111, 119.)

In such cases it is clearly the Sherpa reflex that is aberrant, with the result that the Sherpa reflex for **a* is not always *a* but sometimes *yo*. However, the Sherpa lexical items for which this is so all belong to two well-defined phonological categories that (on mnemonic grounds) I have termed *d*-final and *n*-final from their syllable-final features considered in junction with initial features of a following syllable, in terms of a phonological syllable-final system in which *d* and *n* contrast with the terms *g*, *ŋ*, *b*, *m*, *r*, *l*, *s*, and *z* (from *zero*) (cf. Sprigg 1963, 105). The Sherpa verb lexical items for which *yo* is the reflex of **a* belong, then, to the *yo* types which are classified phonologically as *d* and *n* lexical items, i.e. *yod* and *yon* (WT *-od/ad/od* and *-on/an/on*; cf. p. 119); and *yod* and *yon* are Sherpa reflexes of **ad* and **an* respectively (**d* and **n* syllable-final categories can be reconstructed for Proto-Tibetan; cf. Sprigg 1963, 105). For lexical items classified as belonging to one of the other eight syllable-final categories apart from *d* and *n* (*g*, *ŋ*, *m*, etc.), on the other hand, it is Sherpa *a* that is the reflex of **a* (or, more specifically, Sherpa *əg*, *əŋ*, *əm*, etc., are the reflexes, respectively, of **əg*, **əŋ*, **əm*, etc.).

Sherpa is the only one of the three dialects to have *f* as a reflex of **f* (corresponding to the *e* spelling of WT *e/a/o* lexical items; pp. 112–15); and *f* of **f*. The Balti and Lhasa dialects have no *f*-*f̄* distinction; and all that one can say of them in relation to **f* and **f̄* is that their reflex of **af* and **af̄* is simply *a* in either case (p. 111, ii).

From the immediately preceding paragraphs it might seem that the Sherpa *r-f̄* and *f-f̄* sub-systems were such an efficient guide to Proto-Tibetan **r-f̄* and **f-f̄* categories that the fourfold classification of Sherpa *a*-type verb lexical items on p. 115, (i) *řf̄*, (ii) *r-řf̄*, (iii) *řf̄-f̄*, and (iv) *r-řf̄-f̄*, could be accepted as reflecting a fourfold reconstructed sub-classification of **a*-lexical items for Proto-Tibetan, that, in other words, these four sub-categories needed only the addition of an asterisk each to stand for Proto-Tibetan as well; but a closer examination of these four sub-categories, taking into account Balti and Lhasa cognates and WT orthographic forms, leads to a threefold classification: (i) **řf̄*, (ii) **r-řf̄*, (iii) **r-řf̄-f̄*. The WT reflexes, and example lexical items, are as follows:

- | | |
|--|--------------------------------------|
| (i) <i>a/a/a</i> : <i>mngag/mngags</i> , 'send' | <i>'jag/jags</i> , 'establish' |
| <i>a/a</i> : <i>skrag</i> , 'fear' | <i>skrang/skrangs</i> , 'swell' |
| (ii) <i>a/a/o</i> : <i>'bab/bab(s)'</i> 'bob', 'descend' | <i>lta/bltas/ltos(bltā)</i> , 'look' |
| <i>o/a/o</i> : <i>gsod/bsad/sod</i> , 'kill' | <i>'jog/bzhag/zhog</i> , 'put' |
| (iii) <i>e/a/o</i> : <i>'gengs/bkang/khong</i> , 'fill' | <i>'debs/btab/thob</i> , 'throw'. |

It is the Sherpa *řf̄-f̄* category (p. 115, iii) that is not paralleled in WT: there is no such WT type as *e/a/a*. The Sherpa *ř* imperative forms of its *řf̄-f̄* category, [*kjā:*] 'fill' and [*čā:*/*čē:*] 'rise', correspond to WT imperative forms in either *o* (*khong*), leading to a *r-řf̄-f̄* (type iii) classification, or *e* (*bzhengs*), leading to a non-*a* classification (*yo*; p. 114). My Lhasa-dialect informant was willing to accept both *r* and *ř* imperative forms ([*kā:*/*kwō:*, *čā:*/*čō:*]) for the Lhasa cognates, though preferring the *ř*; and Balti has a *r* imperative form ([*skō:*]) for its cognate of the former, and no cognate for the latter. The membership of the Sherpa *řf̄-f̄* sub-category is, in any case, very low, three lexical items, of which only the two cited here have imperative forms; and it is probably significant that all three have palatality ([*č*]) or palatalization ([*kj kj̄*]) as syllable-initial features, features that are inimical to lip-rounding.

Apart from this one Sherpa sub-category, *řf̄-f̄* (p. 115, iii), the Sherpa sub-categories of *a* lexical items accord well with those of WT orthography above; and the two together formidably support the establishing of the three sub-categories of **a* lexical item proposed on this page: *řf̄*, *r-řf̄*, *r-řf̄-f̄*.

In spite of minor aberrations, to be found in its *řf̄-f̄* category, as above, and its *yod* and *yon* categories of lexical item (pp. 117–120), Sherpa provides powerful support, from a currently spoken dialect, for the view that the Proto-Tibetan **a* category requires further categories, the sub-categories **r-f̄* and **f-f̄*. The need for reconstructing these sub-categories serves as a major distinguishing factor, separating off the **a* category from the **y* (with sub-categories **c* and **o*) and the **w* (also with sub-categories **c* and **o*), at least for *verb* lexical items (for Sherpa examples containing reflexes of these four categories see, for *yc*, p. 116, for *yo*, pp. 116, 119, and 120, for *wc*, p. 116, and for *wo*, p. 113, which also gives Lhasa and Balti examples).

Conclusions

The implications of a feature-based analysis such as this for Benedict's reconstructions in *Sino-Tibetan* are not easy to determine; for few of my

examples appear in his Tibeto-Burman reconstructions, and only one, in fact, appears in the five on his page 126 (cf. p. 110), *gsod/bsad/sod* (his TB '*g-sât', p. 27); but they seem to me, in general, to be more sympathetic towards his reconstruction of a TB *a for such forms in his original text, and to his speculations about possible origins of the 'vocalic alternations' (pp. 126-7). Very possibly the rounding and the frontness features that I have stated, for Sherpa, as phonetic exponents of r and f (versus \bar{r} , and \bar{f}), and corresponding features symbolized, but unspecifically, in WT in o and e, were originally contextual variants (harmonizing with features of other syllables) that overlapped other phonological units, and thereby achieved orthographic status. Indeed, if the lip-rounding and backness features (r features; pp. 110-114) characterizing the imperative forms of \bar{a} - \bar{r} (verb) lexical items are to be attributed to vowel harmony (or, better, *feature harmony*) with some pre-orthographic imperative-particle syllable (cf. Benedict 1972, 126-7), then my synchronic term r in its imperative function (see p. 118) is a reflex—and the only available reflex—of a phonological unit belonging to that long-vanished particle syllable.

My analysis does not seem to me, however, to be consistent with Benedict's *revised* analysis (1972, 126, n. 344), in terms of the three vowel phonemes *a, *â, and *ə, which derives from his segment-based 'vocalic alternation', quite different in principle from the feature-based analysis that I have advocated in this article. I should have thought that variation in the form of a lexical item under differing, but complementary, grammatical conditions, like that symbolized by a/a/o, e/a/o, and o/a/o in WT verbs, and by *drink/drank/drunk* or *foot/feet* in English, would not be a secure basis for distinguishing separate vowel units (the *a, *â, and *ə of Benedict's revised reconstruction); my analysis here, in which the relevant Balti, Lhasa, and Sherpa lexical items are all treated as examples of a single phonological category, the ə-category, and ə, in turn, is treated as the reflex of a single Proto-Tibetan category *ə, is much more in harmony with what I take to be his original reconstruction of a correspondingly single unit, *a, not only for *gsod/bsad/sod* (1972, 27, 126) but for similar examples of 'vocalic alternation' too. My object, in phonological analysis and reconstruction alike, has been to construct a formula for each lexical item such that that formula shall be equally representative of all its variant forms, whether junction variants or grammatical variants.

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